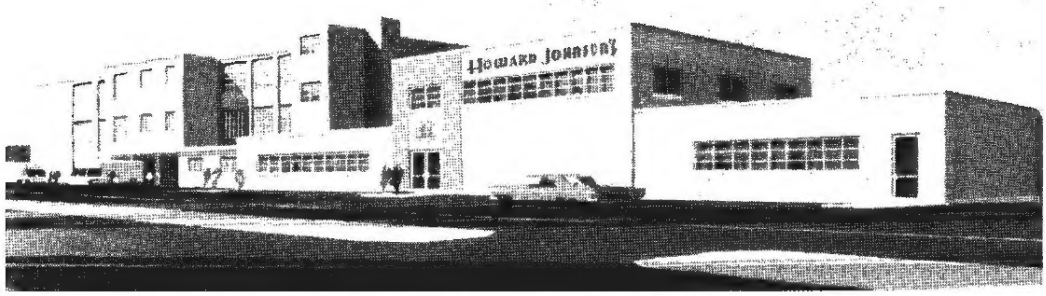
HOWARD JOHNSON'S

Frozen Dessert Formulas

5-10-66

We would like to thank personnel from the Wholesale division of the Howard Johnson Company, who answered the questionnaire that supplied much of the information compiled in this manual.



Robert D. Parks
Vice President

Introduction

The reputation of Howard Johnson's was built on quality ice cream. Over the span of forty years, our firm has changed the way the American public enjoys ice cream: both on highways and at home using only the finest natural ingredients. At a time of rapid growth, and the opening of new distribution centers across the country, our department has produced a formula book for your facility to follow accordingly. Included in this guide is a selection of new flavors and product varieties we are distributing in 1966. You will also find instructions to ensure a quality frozen dessert product, including daily testing procedures for butterfat content, pasteurization methods and the ratios required to produce our standard base mixes.
Always follow the instructions. You will find it makes the job easier.

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THE CONTENTS OF THIS BOOK ARE PROPRIETARY TO THE HOWARD JOHNSON COMPANY, FOR USE BY MANUFACTURING PERSONNEL ONLY.
THE INFORMATION IS CONFIDENTIAL AND SHOULD BE REGARDED AS SUCH BY ALL WHO HAVE OCCASION TO USE IT. IT IS LOANED TO YOU ON THE PAYMENT OF A DEPOSIT, WHICH WILL BE REFUNDED WHEN THE BOOK IS RETURNED.

ABOVE — New Miami ice cream plant addition visited by Southern Division executives Fred Scott and Howard C. Cummings.

What to Know

COMPANY UPDATES

MODERNIZATION — Improvements are being made at each of the Howard Johnson Company facilities and distribution centers to modernize existing equipment, which will increase capacity and speed of production. Last year, we completed a thorough upgrade of our Chicago facility, including the installation of three 4,000 gal. holding tanks for receiving and storage of cream and skimmilk for ice cream processing. A new C.I.P. (clean in place) system automates the sterilization process for facility equipment via a centralized control panel. Gone are the days of cranking out small, hand-made batches from our first store in Wollaston. Newly-installed freezers now enable most of our facilities to process over 600 gallons of ice cream per hour.

NEW PRODUCTS — 1966 will see the introduction of additional frozen dessert products to be developed at each of our ice cream plants. Three varieties of Ice Milk were introduced in test markets during 1965 to satisfactory results, and will be rolled out to other markets in the months to follow. Three new flavors of ice cream are now in production — Banana Chip, Cherry Chip and Date Crunch. And later this year, Pecan Chip and Rum Raisin will arrive to all stores in bulk containers and prepackaged retail cartons.

INTRODUCTION OF VEGETABLE GUMS — This year, we phased out the additional gelatin as a stabilizer in all of our sherbets. A prepared vegetable gum derived from Locust Bean, Guar and Carrageenan is now in use, resulting in a more cost effective product with superior taste.

PACKAGE REDESIGN — Howard Johnson's will be introducing a new symbol across its packaging over the next several months, selected by consumer majority in a recent study and soon to be incorporated on our ice cream cartons. A roof-like mark in our signature orange and blue is now the focal point of the package, accompanied by distinctive script labeling for our ice cream, sherbet and ice milk varieties. Ice cream facilities should expect to receive the new cartons in approximately two months, with retail distribution to begin in August.

LEFT — New packaging will appear later this year on frozen dessert cartons by the Sealright Company. Cartons of all sizes will feature easy-identification rings on the lid: orange for sherbet, blue for ice milk and plain labeling for ice cream.

ICE CREAM PRODUCTION

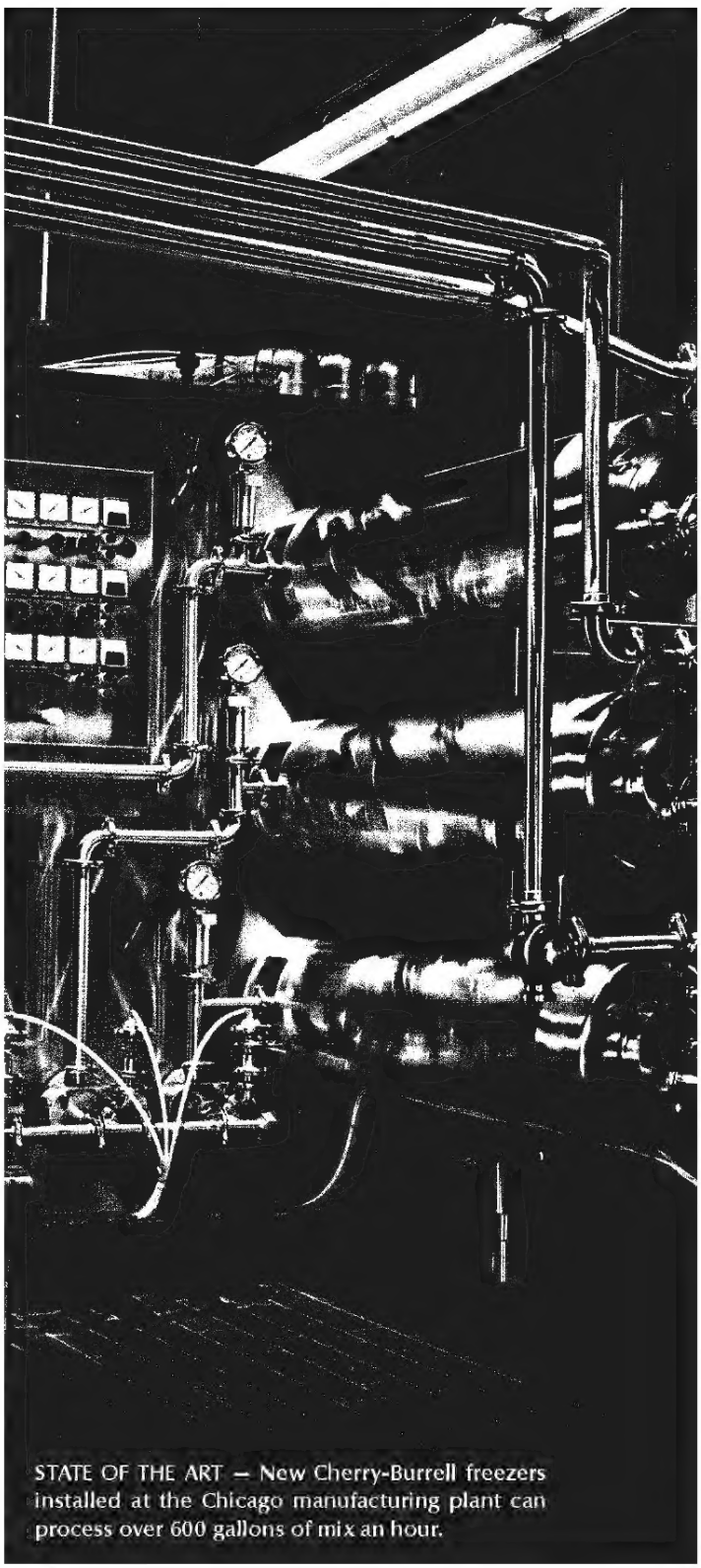
VOLUME AND SCALE — The formulas in this book will produce up to ten gallon batches, also known as the standard batch volume for laboratory testing. At the discretion of the plant manager, the frozen dessert formulas may be scaled to accommodate each facility's quota. We recognize that some manufacturing plants have been producing smaller quantities during the slow parts of the year, and the equipment in use at each facility varies in capacity.

EQUIPMENT — As previously noted, the Company has been actively modernizing its ice cream manufacturing facilities, a thorough equipment replacement process which will continue in the months to follow. It is expected the procedures for pasteurization, homogenization and freezing will slightly vary at each facility. Always read the provided manufacturer's directions before proceeding to operate equipment throughout the manufacturing plant. The purpose of the instructions in the following pages are merely to help standardize the manufacturing process at each facility operating either older or modern equipment.

TESTING — In addition to bi-monthly quality control inspections, facility personnel are required to test the composition of frozen dessert products daily. To ensure the texture and flavor of the product are consistent with Company standards, tasting and lab testing should be performed for the day's production. Butterfat is to be tested in each batch of base mix produced; the instructions for this process can be found on page 6.

FLAVORINGS — All flavor ingredients should be inspected for any spoilage or imperfections prior to use. Chopped nut ingredients may contain residual shells which, if added to the mix, would produce a defective product. Supply of available ingredients may affect the production schedule of frozen dessert products. It is recommended to perform regular supply inspections at the facility and adjust production accordingly. Larger manufacturing plants should properly allocate product inventory to prevent ingredient shortages. This would include select canned syrups and sauces manufactured for resale, maraschino cherries, etc.

NOTE: The total percentage of butterfat may decrease when solid ingredients or syrups are added to the frozen desserts. Many formulas request as little as five percent and as much as twenty percent reduction to the base mix per batch. Follow formulas as directed.



STATE OF THE ART — New Cherry-Burrell freezers installed at the Chicago manufacturing plant can process over 600 gallons of mix an hour.

ABOVE — Peter DiPaolo explains the function of butterfat bottles for testing ice cream in our Brockton laboratory.

TESTING FOR BUTTERFAT

The daily testing of ice cream and other frozen dessert products is required. The following will aid your laboratory in testing both milk for the frozen desserts and the finished product for butterfat content.

PREPARATION OF SAMPLE — For ice cream testing, melt sample at room temperature, and if necessary, heat to eliminate the foam. Warm ice cream mix approximately. Reduce large particles fruit and nut cream into a finely divided state.

APPARATUS AND REAGENTS

- **Regular Babcock equipment and glassware, including milk test bottles.**
- **Ammonium hydroxide (28–29 percent NH_3).**
- **Normal butyl alcohol (boiling point of 244° F).**
- **Diluted commercial sulphuric acid (approximate specific gravity 1.72–1.74 at 68° F). The acid is prepared by adding three and one half percent parts, by volume, of commercial sulphuric acid (specific gravity 1.82-1.83) to one part water in a heat resistant container.**

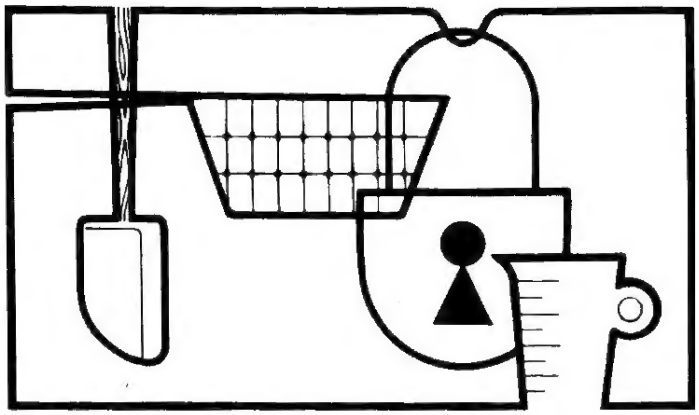
PRECAUTIONS — The small amount of sample which adheres to the inside of the neck of the bottle should be washed into the bottle by the reagent; otherwise it may collect at the base of the fat column and make the correct reading of the fat column difficult.

TESTING MILK FOR BUTTERFAT:

1. Measure 17.5 ml. milk into a milk test bottle.
2. Add 17.5 ml. of the diluted sulfuric acid and mix with a rotating motion until a dark brown color appears.
3. Place in tester and centrifuge the bottle for 5 minutes.
4. Remove and add hot water to bring contents to base of neck.
5. Centrifuge 2 minutes.
6. Remove and add water to float fat column above the zero mark on bottle.
7. Centrifuge 1 minute.
8. Place in hot water bath (135-140º F.) for five minutes.
9. With a pair of dividers placed at the extreme ends of the fat column, read the test results.

TESTING ICE CREAM FOR BUTTERFAT:

1. Weigh 9 grams of the representative sample into a 9-gram, 20 percent milk test bottle, with the ice cream injections (fruit, nuts or candy) thoroughly mixed.
2. Add 2 ml. ammonium hydroxide (preferably from a burette). Mix for approximately 30 seconds.
3. Add 3 ml. butyl alcohol. Mix for approximately one minute (samples containing chocolate require additional mixing.)
4. Add 17.5 ml. of the diluted sulphuric acid. Mix thoroughly until digestion is completed.
5. Centrifuge the bottle for 5 minutes.
6. Add water (130-140º F.) to bring the contents within one-fourth inch of the base of the neck of the bottle. Centrifuge 2 minutes.
7. Add enough water (130-140º F.) to keep the fat within the graduated portion of the neck of the bottle until read. Centrifuge 1 minute.
8. Place the bottle in a water bath at 130º F. for 5 minutes. Allow a few drops of glymol to run down the inside of the neck of the bottle just before reading. Measure the length of the fat column from the bottom of the lower meniscus to the sharp line of demarcation between the glymol and the fat.



Base Mix Production

At the foundation of all Howard Johnson's ice cream flavors is the base mixture, an exclusive formula created by Howard D. Johnson in 1925. It is produced prior to the freezing process and includes ingredients which must be properly pasteurized and homogenized prior to adding flavoring. It should be stored for at least 12 hours in the refrigerated section of your manufacturing plant before use.

Listed below are the ingredients which make up the dairy base mixes, as well as their concentration of fat content, nonfat milk solids, total solids and material weight per gallon.

	% FAT	% MILK SOLIDS NOT FAT	% TOTAL SOLIDS	WEIGHT PER GALLON
WATER	0.00	0.00	0.00	8.32 lbs.
CREAM	35.00	5.69	40.69	8.31 lbs.
CONDENSED SKIMMILK	0.00	27.00	27.00	9.25 lbs.
GRANULATED SUGAR	0.00	0.00	100.00	7.50 lbs.
FROZEN EGG YOLKS	33.30	0.00	50.50	8.57 lbs.
GELATIN	0.00	0.00	90.00	
DUTCH COCOA (FOR #2)	20.00	9.00	92.50	8.47 lbs.

FORMULA

PRIMARY MIX (100 LBS.)

51.43 LBS.	35% CREAM
16.93 LBS.	CONDENSED SKIMMILK
12.53 LBS.	WATER
1.00 LBS.	EGG YOLKS
18.00 LBS.	SUGAR
0.11 LB.	200 BLOOM GELATIN

RATIO

PRIMARY MIX

18%	BUTTERFAT
7.5%	MILK SOLIDS NOT FAT
0.5%	EGG YOLK SOLIDS
18%	SUGAR
0.1%	STABILIZER
44.1%	**TOTAL SOLIDS**

With the proper ratio of ingredients, scaled to desired batch size, the PRIMARY MIX can be produced using the following steps:

1. Gather materials and precise quantities of each item specified.
2. Prepare vat for mixing and pasteurization. The pasteurization vat must ALWAYS be cleaned and properly sanitized before starting.
3. The liquid ingredients, such as cream, condensed skimmilk and water are first added and followed by solid ingredients: frozen egg yolk, sugar and gelatin.†
4. As soon as the materials have been slowly heated to 110-120º F, the sugar may be added to the base mix.
5. Pasteurize the base mix. (page 10)
6. Homogenize the base mix. (page 11)
7. Test for butterfat content: 18 percent per ice cream mix sample.

†Gelatin should be injected directly to the mix before the temperature of the pasteurizer reaches 110º F — otherwise the consistency of the base may become lumpy.

INGREDIENTS IN THE BASE MIX

CREAM — Cream is the chief source of butterfat in the mix. Since it supplies most of the fat in the majority of ice cream made, it must be of highest quality. It should be needless to mention that it should be sweet and free from off-flavors. It supplies one of the most expensive ingredients to the mix, namely, butterfat, and can influence the flavor of the finished product one way or another. None but the best Grade "A" cream should be used. Some of our busier manufacturing plants have been freezing cream in the flush seasons of the year to use when possible shortages occurs. This procedure has its merits and supplies fat when needed, but often the cream is not frozen properly or not kept at a sufficiently low temperature.

CONDENSED MILK — The term "condensed skimmilk" is used to define unsweetened condensed milk, produced from fresh skimmilk. The unsweetened condensed milk will not keep long unless sterilized with heat. The variety used in the frozen desserts is not preserved in any way and should be used as soon as possible to prevent deterioration. The quality of the original skimmilk is an important factor in producing a product of good flavor and keeping quality.

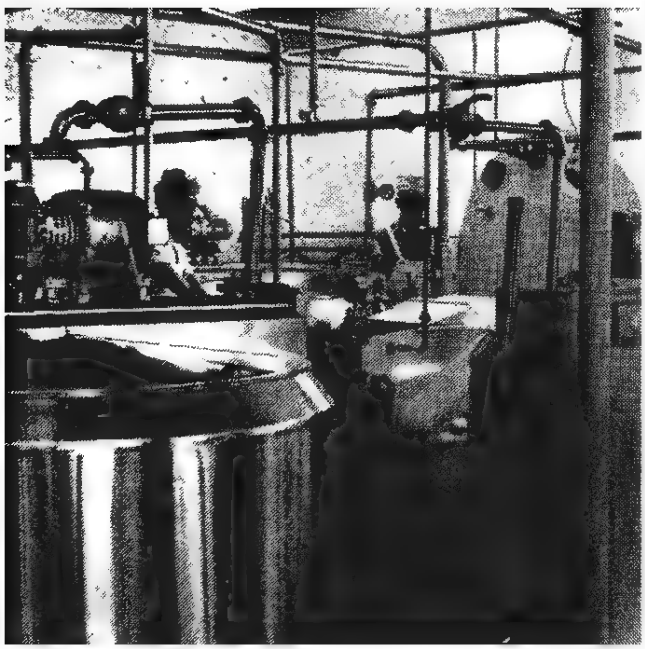
WATER — A considerable amount of water is used in standardizing the weight of the base mix, obtained without increasing the proportion of milk solids not fat above the standard mix ratio.

SUGAR — The sugar used in the base mix is sucrose, or the sugar obtained from the sugar cane or sugar beet, and will be referred to as cane sugar. Cane sugar contains approximately one hundred percent solids.

EGG YOLK — Eggs have long been used in the making of home made ice cream and French ice cream. For over forty years, egg yolks in frozen form have been used in the manufacture of our ice cream. Egg yolk increases the food value of the frozen dessert products and aids in obtaining the overrun or yield. As small amounts as one fourth of one percent aid in producing the yield. The amount commonly used ranges from 0.25 percent to 0.5 percent. The texture is improved by using about 0.5 percent. Egg yolk will not substitute vegetable gums or gelatin, as it acts differently. It is a good emulsifying agent and a very small amount will stabilize a large amount of fat. Egg yolk can be added in the frozen form by mixing with water or skimmilk and dissolved into the base mix.

GELATIN — Gelatin is used to produce a smoother texture. The amount used in the mix is low, averaging at about 0.1 percent. The amount used is governed by certain factors, such as, the strength of the gelatin, the composition of the mix and, to a lesser degree, by the temperature and pressure of homogenization. Gelatin is added to prevent the formation of large water crystals. Enough should be added to satisfy this function without causing a "livery" mix. Ice cream made from a mix of this type may be too smooth and have a stringy and gummy appearance. An excess of gelatin also tends to prevent the ice cream from melting down properly. Excessive viscosities should be avoided, not only because of the reasons given, but because of the loss due to adhering to cans, pipe lines, etc. and effect on yield.

GUMS — When a prepared gum of locust bean, guar and carrageenan is used the mixture of gum and sugar it will dissolve readily in cold water. The amount of prepared gum added to the base mix may vary by the type of frozen dessert produced.



PASTEURIZATION

Once the ingredients of the dairy base are combined, the mixture will be ready for pasteurization, which should always be **slow-vat pasteurized**. The purpose of pasteurization is threefold. The chief purpose is to kill harmful bacteria that may exist in the ingredients entering the mix, thus making a safe food and improving the keeping quality. Another purpose is to facilitate the mixing of all of the ingredients, dissolve the sugar and gelatine, and melt the butter if butter is used. The pasteurization process is also important to facilitate the homogenization process. The temperature of pasteurization should be 145º F, with the mix being held at this temperature for at least **30 minutes**. It is important that the mix be maintained at this temperature for the entire 30-minute period if proper pasteurization is to be expected. It is true that some of the mix will be held longer than 30 minutes before it passes through the homogenizer, typically in larger batches where up to 600 gallons of mix may be processed. This fact should not encourage one to start homogenizing or viscolizing before the entire mix has been held at the pasteurizing temperature for the entire period. The mix is usually pasteurized in the mixing vat, and may be held in this vat. It is promptly cooled to 50º F or lower after the pasteurization process is complete.

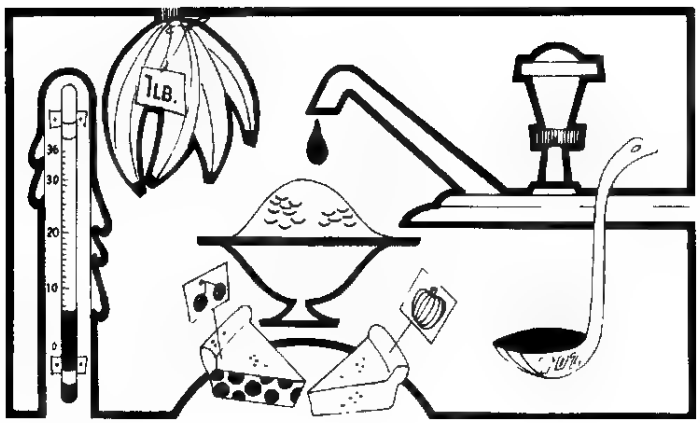
HOMOGENIZATION

The high butterfat base mix in our ice cream reacts differently than most commercial mixes because the influence of the fat on ice cream properties is accentuated. An excessive viscosity interferes with cooling the mix and with obtaining the proper overrun. Thus the ice cream base mix produced in our facilities demand slightly different processing procedures from those used in the production of other commercial ice cream brands. For example, the homogenizing pressures will need to be lower to avoid a curdled appearance in the melted ice cream.

It is critical to homogenize the mix at or below **145° F**, the pasteurizing temperature. In some regional plants, the mix is cooled to 130-110º F. With the latter temperatures a lower pressure should be used since the lower temperature tends to produce a higher viscosity. The principal advantage gained by cooling the mix to 110º F after pasteurization is to prevent holding the mix too long at the pasteurizing temperature. Some of the mix will be held longer than the 30-minute holding period, the time of holding depending on the capacity of the homogenizer. If the capacity of the pasteurizer and homogenizer is 600 gallons each per hour, the last portion of the mix will have been held for one hour after the holding period. It is important that the base mix will not be held too long at the pasteurizing temperature during homogenization.

The pressure used for the homogenizer varies between 1500 and 4000 pounds per square inch, depending on the composition, acidity, temperature of the mix and the viscosity desired. The average pressure used in the ice cream mixes is between 1500 and 2000 pounds per square inch. High viscosity mixes are not only slow to whip but are often unwieldy to handle and should be homogenized carefully. As the ice cream base has high butterfat, milk solids not fat (MSNF) and acidity, a high pressure will not be suitable in successfully homogenizing the mix. The gelatin content also influences the level of the pressure used. It should also be noted that a higher overrun of the ice cream in the freezer will have a less soggy composition.

As soon as the mix discharges from the homogenizer, it should be cooled quickly for best results. The pressure of the homogenizer is sufficient to force the mix over the cooler. A tubular cooler is employed to permit the cooling of the mix to 40º F or below for best results.



Flavors, Ice Cream & Sherbets

Following production and testing of the dairy base, your distribution center will be ready to produce the ice cream and sherbet flavors applicable to your region. Flavorings will generally be applied after the base mix enters the continuous freezer units.

For your convenience, we have compiled all formulas for flavors marketed regularly and seasonally by each of our divisions:

- WESTERN
- SOUTHERN
- MID-WESTERN
- MID-ATLANTIC
- NEW ENGLAND

Before preparation, ensure that your distribution center has ample supply of the necessary ingredients for each formula. Use approved company suppliers for ingredients, they are specified for your region.†

Many flavors use equipment in addition to the continuous freezer. We recommend you familiarize yourself the symbols below — they indicate which equipment will be used in flavor production.

- V VARIEGATED — Use the variegated pump unit to RIPPLE mix
- NUTS — ALWAYS blended into mix with the fruit feeder unit
- FRUIT — Whole fruits added to mix using the fruit feeder
- CHIP — Melted chocolate dispersed into mix with feeder
- CANDY — Added to fruit feeder, or dissolved before freezing

† In the event an ingredient is no longer in production from its supplier, a product substitute or interim supplier may be recommended. Plant personnel should check regularly with suppliers to plan for possible supply shortages.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

1. VANILLA

5 GAL. PRIMARY BASE MIX

11 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Transfer mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained.

2. CHOCOLATE (BASE MIX)

BEFORE PASTEURIZATION, ADD:

1 LB. DUTCH PROCESS COCOA

1 LB. SUGAR

2 ½ OZ. SALT

TO 5 GALLONS CHOCOLATE MIX, ADD:

5 OZ. PURE VANILLA EXTRACT

1. Follow the procedure for producing the Primary Mix **(page 8)** while mixing the cocoa, salt, and additional sugar quantities with the solid ingredients.
2. Pasteurize and homogenize the ice cream base as directed on pages 10, 11.
3. Allow base mix to refrigerate for at least 12 hours before use.
4. Apply Pure Vanilla extract to the portion of Chocolate base mix that will be transferred to the freezer unit. Store the remaining mix in refrigeration.
5. Transfer Chocolate base mixture with extract to the freezer unit.
6. Discharge ice cream after the desired overrun and consistency is obtained.

3. STRAWBERRY

4 ½ GAL. PRIMARY BASE MIX

3 QTS. FRESH STRAWBERRIES

- 1 ½ LB. SUGAR TO SWEETEN
- 1 ½ OZ. PECTIN
- 2 OZ. 50% CITRIC ACID SOLUTION

1 ½ OZ. BEET JUICE (FOR COLOR)

1. Prepare strawberries, slicing only the top of the berries. The strawberries should be mixed together with the sugar, pectin and citric acid solution. The mixture should be kept below 40° F for 12-24 hours prior to injection.
2. Add beet juice to the ice cream base mix for natural coloring prior to freezing. The mix should have a pink coloration.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject strawberry mixture into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

4. APPLE STRUDEL

4 GAL. PRIMARY BASE MIX

1 GAL. PREPARED APPLE TOPPING

- 16 GRANNY SMITH APPLES CORED, SLICED
- 1 OZ. CINNAMON POWDER
- 10 OZ. BROWN SUGAR
- 2 LBS. GRANULATED SUGAR
- 1 LB. BUTTER
- ½ CUP APPLE CIDER VINEGAR
- 1 ¼ PT. APPLE JUICE
- 2 OZ. MODIFIED FOOD STARCH
- ½ OZ. SALT

5 OZ. PURE VANILLA EXTRACT

1. In a double boiler over medium heat, combine sliced apples, brown sugar and half of the butter. The mixture should be cooked for 8 to 10 minutes, or until the apples are fully softened. Reduce heat to low, and add the granulated sugar, modified starch, salt, apple cider vinegar and juice. Stir the mixture for approximately 5 to 6 minutes or until a thick syrup consistency is obtained. Remove from heat, and stir in the cinnamon and remaining butter. Allow mixture to cool below 40° F and refrigerated over 12 hours before use.
2. Add the Pure Vanilla extract to ice cream base mix prior to freezing.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject prepared apple topping into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

5. BANANA

4 ½ GAL. PRIMARY BASE MIX

4 LBS. BANANA PULP

- 1 LB. SUGAR
- ¾ CUP LEMON JUICE

YELLOW FOOD COLOR

1. Select very ripe bananas, peel and then mash with sugar and lemon juice.
2. Prior to freezing, blend banana pulp into ice cream base mix and apply yellow color to the mix. Color of mix should be a faint yellow consistency.
3. Transfer mixture to freezer unit. Discharge after the desired overrun and consistency is obtained.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

6. BANANA CHIP

REFERENCE #5 FORMULA† ADDING:

- 2 LBS. BITTERSWEET CHOCOLATE
- 1 OZ. VEGETABLE OILS

Follow steps 1-3 on BANANA formula, performing the following as the ice cream mixture is transferred from freezer to fruit feeder:

4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

7. BLACK RASPBERRY

4½ GAL. PRIMARY BASE MIX

2 QTS. SEEDLESS BLACK RASPBERRY PUREE

- 1 LB. SUGAR TO SWEETEN
- 1½ OZ. 50% CITRIC ACID SOLUTION

1 OZ. BEET JUICE (FOR COLOR)

BLUE FOOD COLOR

1. Prepare black raspberry puree. Combine sugar and berries in saucepan, then add water and citric acid. The mixture should be maintained at a slow boil for around 5-10 minutes, or until the liquid is of a syrup consistency. Strain the liquid to remove at least ¾ of the berry seeds.
2. Apply black raspberry puree and natural coloring to ice cream base mix prior to transferring mixture to the freezer unit. Color pink-purple color.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

8. BLACK WALNUT

4¾ GAL. PRIMARY BASE MIX

1½ LBS. CHOPPED BLACK WALNUTS

1 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject chopped black walnuts into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

9. BURGUNDY CHERRY

4 GAL. PRIMARY BASE MIX

1 GAL. PROCESS BURGUNDY CHERRIES

1½ OZ. BEET JUICE (FOR COLOR)

1. Prior to freezing, apply natural beet juice coloring to the ice cream base mix. The mix should have a pink coloration.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject process Burgundy Cherries into fruit feeder while the ice cream is being discharged from the freezing chamber.

10. BUTTERCRUNCH

4¾ GAL. PRIMARY BASE MIX

3 LBS. BUTTERCRUNCH CANDY PIECES*

1 OZ. SALT

1. Prior to freezing, apply salt to the ice cream base mix.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject ground Buttercrunch candy into fruit feeder while the ice cream is being discharged from the freezing chamber.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

11. BUTTERSCOTCH

4½ GAL. PRIMARY BASE MIX
2 QTS. BUTTERSCOTCH SAUCE
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, apply the butterscotch sauce to the ice cream base mix.
2. Add caramel color until an amber saturation is obtained.
3. Transfer mixture to freezer unit.
4. Discharge ice cream after the desired overrun and consistency is obtained.

12. BUTTER PECAN

4½ GAL. PRIMARY BASE MIX
10 LB. CHOPPED BUTTER ROASTED PECANS
CARAMEL COLOR (50% BURNT SUGAR)

1. Add caramel color to the ice cream base mix before transferring to freezer unit. Color to a light brown saturation.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject chopped butter roasted pecans into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

13. CARAMEL

5 GAL. PRIMARY BASE MIX
20 OZ. CARAMEL SYRUP

1. Prior to freezing, apply the caramel syrup to the ice cream base mix.
2. Transfer base mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained.

14. CARAMEL FUDGE

4½ GAL. PRIMARY BASE MIX
1 GAL. CARAMEL RIPPLE SAUCE*
7 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Transfer base mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained, transferring mix to the variegated pump.
4. The Caramel Ripple sauce should be refrigerated to around 35-40° F before adding to the ice cream.
5. Pour the cooled sauce into the hopper of the variegated pump. Allow the pump to thoroughly marble the ice cream mixture then discharge from unit.

15. CHERRY CHIP

REFERENCE #16 FORMULA† ADDING:
2 LBS. BITTERSWEET CHOCOLATE
1 OZ. VEGETABLE OILS

Follow steps 1-3 on CHERRY VANILLA formula, performing the following as the ice cream mixture is transferred from freezer to fruit feeder:

4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

* See page 24 for instructions

† Reduce base mix by 5 percent in reference formula.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

16. CHERRY VANILLA

4 GAL. PRIMARY BASE MIX
1 GAL. PROCESS MARASCHINO CHERRIES
5 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject process Maraschino Cherries into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

17. CHOCOLATE CHIP

4 ¾ GAL. PRIMARY BASE MIX
2 LBS. BITTERSWEET CHOCOLATE
1 OZ. VEGETABLE OILS
- ½ SOYBEAN OIL
- ½ COTTONSEED OIL

8 OZ. PURE VANILLA EXTRACT

1. Transfer base mix to freezer unit. Add Pure Vanilla extract to the base mix.
2. Discharge ice cream after the desired overrun and consistency is obtained, transferring mix to the fruit feeder.
4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

18. COCONUT

4 ½ GAL. PRIMARY BASE MIX
2 QTS. CREAMED HAWAIIAN COCONUT
- 4 OZ. 50% CITRIC ACID SOLUTION
- 8 OZ. SUGAR
- 1 CUP WATER

1. Break apart the creamed coconut so that it is less coarse for mixing. Whisk the creamed coconut in water with the citric acid solution and sugar until a dense cream consistency is obtained. Chill mixture to below 40° F.
2. Prior to freezing, add the coconut cream mixture to the ice cream base mix.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

19. COFFEE

5 GAL. PRIMARY BASE MIX
1 PT. BREWED COFFEE EXTRACT*
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, add the brewed coffee extract to the ice cream base mix.
2. Add caramel color until a golden color is obtained.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

20. COFFEE BRANDY

4 ¾ GAL. PRIMARY BASE MIX
1 PT. BREWED COFFEE EXTRACT*
2 ½ OZ. BRANDY FLAVORING
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, add the brewed coffee extract and coffee brandy flavoring to the ice cream base mix.
2. Add caramel color until a light gold color is obtained.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

21. COFFEE NAPOLEON

REFERENCE #19 FORMULA† ADDING:

4 LBS. CHOPPED LADY FINGERS

Follow steps 1-3 on COFFEE formula, performing the following as the ice cream mixture is transferred from freezer to fruit feeder:

4. Inject chopped lady fingers into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

22. DATE CRUNCH

4½ GAL. PRIMARY BASE MIX

7½ LB. PITTED MEDJOOL DATES, SOFTENED

2 LBS. CHOPPED ENGLISH WALNUTS

8 OZ. DATE SYRUP

CARAMEL COLOR (50% BURNT SUGAR)

1. Soften the pitted Medjool dates by suspending fruit in warm water for less than 1 hour. Remove dates from water, then add to mixture consisting of chopped English walnuts and date syrup. The mixture should be kept below 40° F for 12-24 hours prior to injection.
2. Add caramel color to the ice cream base mix before transferring to freezer unit. Color to a light brown saturation.
3. Freeze the ice cream until it obtains the desired overrun and consistency.
4. Inject date, walnut and syrup mixture into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

23. FROZEN PUDDING

4¼ GAL. PRIMARY BASE MIX

1 PT. PROCESS MARASCHINO CHERRIES

1 PT. RAISINS

1 PT. CRUSHED PINEAPPLE

1 LB. CHOPPED ENGLISH WALNUTS

6 OZ. CHOPPED CANDIED ORANGE PEEL

1 PT. RUM FLAVOR

1. Prepare fruit ingredients by submerging the maraschino cherries, raisins, crushed pineapple and candied orange peel in rum flavor. Refrigerate the mixture below 40° F for over 24 hours prior to injection.
2. Transfer mixture to freezer unit.
3. Freeze the ice cream until it obtains the desired overrun and consistency.
4. Inject the fruit mixture and chopped English walnuts into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

24. FUDGE RIPPLE V

4½ GAL. PRIMARY BASE MIX

1 GAL. FUDGE RIPPLE SAUCE*

9 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Transfer base mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained, transferring mix to the variegated pump.
4. The Fudge Ripple sauce should be refrigerated to around 35-40° F before adding to the ice cream.
5. Pour the cooled sauce into the hopper of the variegated pump. Allow the pump to thoroughly marble the ice cream mixture then discharge from unit.

25. GINGER

4¾ GAL. PRIMARY BASE MIX

4 LBS. PRESERVED GINGER ROOT

- 4 LBS. PEELED, CHOPPED GINGER ROOT
- 3 PTS. WATER
- 4 LBS. SUGAR

2 OZ. PURE VANILLA EXTRACT

1. Rinse peeled and chopped roots and soak in cold water for at least 12 hours. Drain the water.
2. Place in jacketed kettle with additional water. Bring to a boil. Drain and repeat process for 3 additional cycles.
3. In a double boiler, boil sugar and 3 pints water together for 20 minutes to produce a syrup consistency. Heat until mixture comes to a boil, stirring the drained ginger root to prevent burning. Remove ginger mixture from heat and refrigerate below 40° F for at least 12 hours prior to injection.
4. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
5. Freeze the ice cream until it obtains the desired overrun and consistency.
6. Inject preserved ginger root mixture into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

* See page 24 for instructions

† Reduce base mix by 5 percent in reference formula.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

26. LEMON

4½ GAL. PRIMARY BASE MIX
2 QTS. LEMON JUICE
1 PT. ORANGE JUICE
3 LBS. SUGAR
YELLOW FOOD COLOR

1. Prior to freezing, add the lemon and orange juices with sugar into the ice cream base mix.
2. Add food color until a faint yellow is obtained.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

27. MACAROON

4¾ GAL. PRIMARY BASE MIX
2 LBS. CHOPPED MACAROONS
5 OZ. PURE VANILLA EXTRACT
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Add caramel color for light brown consistency.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Add chopped macaroons into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

28. MAPLE WALNUT

4¾ GAL. PRIMARY BASE MIX
2 LBS. CHOPPED ENGLISH WALNUTS
2 OZ. PURE MAPLE EXTRACT
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, apply the pure maple extract to the ice cream base mix. Add caramel color for light brown.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Add chopped English walnuts into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

29. MINT CHIP

4¾ GAL. PRIMARY BASE MIX
2 LBS. BITTERSWEET CHOCOLATE
1 OZ. VEGETABLE OILS
1 TSP. PEPPERMINT OIL
GREEN FOOD COLOR

1. Prior to freezing, apply the peppermint oil and coloring to the ice cream base mix. Color should be pale green.
2. Transfer mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained.
4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

30. MOCHA CHIP

3½ GAL. PRIMARY BASE MIX
1¼ GAL. CHOCOLATE BASE MIX
6 OZ. BREWED COFFEE EXTRACT*
2 LBS. BITTERSWEET CHOCOLATE
1 OZ. VEGETABLE OILS

1. Combine the Primary base mix with the portion of Chocolate base mix.
2. Prior to freezing, apply coffee extract to the combined ice cream base mix.
3. Transfer mixture to freezer unit.
4. Discharge ice cream after the desired overrun and consistency is obtained.
4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

31. ORANGE PINEAPPLE

4½ GAL. PRIMARY BASE MIX
2 QTS. CRUSHED PINEAPPLE
2 OZ. ORANGE EXTRACT
4 OZ. CHOPPED CANDIED ORANGE PEEL

1. Add orange extract to ice cream base mix before transferring to freezer unit.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject crushed pineapple and chopped candied orange peel into the fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

32. PEACH

4 GAL. PRIMARY BASE MIX
1 GAL. PEACH PUREE
- 4½ LBS. CHOPPED ELBERTA PEACHES
- 1 LB. SUGAR
- 4 OZ. 50% CITRIC ACID SOLUTION

6 OZ. PEACH EXTRACT

1. Select soft, ripened peaches. Wash the fruit, dip in scalding water for about 1 minute, plunge into cold water and slide off the skins. The peaches should be thoroughly chopped and pitted. Using a double boiler, heat the chopped peaches with sugar to boil for 5 minutes or until sugar is fully dissolved. Stir the mixture carefully during the cooking process to prevent burning. Mix in citric acid solution and allow puree to cool under 40° F for at least 12 hours.
2. Apply the peach extract to the ice cream base mix before transferring to freezer unit.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject peach puree into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

33. PECAN BRITTLE

4¾ GAL. PRIMARY BASE MIX
3 LB. CHOPPED PECAN BRITTLE CANDY*
CARAMEL COLOR (50% BURNT SUGAR)

1. Add caramel color to the ice cream base mix before transferring to freezer unit. Color to a light brown saturation.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Inject chopped pecan brittle candy into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

34. PECAN CHIP

REFERENCE #12 FORMULA† ADDING:
2 LBS. BITTERSWEET CHOCOLATE
1 OZ. VEGETABLE OILS

Follow steps 1-3 on BUTTER PECAN formula, performing the following as the ice cream mixture is transferred from freezer to fruit feeder:

4. Melt the bittersweet chocolate with vegetable oil slowly in double boiler with boiling water. The water vapor will warm the chocolate as it is continuously stirred, careful not to overcook the contents in the process.
5. Remove contents from stove and inject the melted chocolate into feeder. The liquid should shatter and crystallize as it combines with the ice cream.

35. PEPPERMINT STICK

4¾ GAL. PRIMARY BASE MIX
3 LBS. RED AND GREEN PEPPERMINT CHIPS
½ TSP. PEPPERMINT OIL

1. Prior to freezing, apply the peppermint oil to the ice cream base mix.
2. Transfer mixture to freezer unit.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Add red and green peppermint chips into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

* See page 24 for instructions

† Reduce base mix by 5 percent in reference formula.

ICE CREAM

Ice Cream formulas produce approximately 10 gallons with 100 percent overrun

36. PINEAPPLE

4½ GAL. PRIMARY BASE MIX
2 QTS. CRUSHED PINEAPPLE

1. Transfer ice cream base mix to freezer unit.
2. Freeze the mixture until it obtains the desired overrun and consistency.
3. Add the crushed pineapple into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

37. PISTACHIO NUT

4¾ GAL. PRIMARY BASE MIX
2 LBS. CHOPPED PISTACHIO NUTS
- ROASTED WITH 1 OZ. SALT

5 OZ. ALMOND EXTRACT
GREEN FOOD COLOR

1. Roast and salt the pistachios nuts as directed.
2. Prior to freezing, apply the almond extract to the ice cream base mix.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject chopped roasted pistachio nuts through the fruit feeder and into mixture as the ice cream is being discharged from the freezing chamber.

38. RUM RAISIN

4½ GAL. PRIMARY BASE MIX
12 LBS. RAISINS, WATER SOFTENED
- 1 PART THOMPSON SEEDLESS RAISINS
- 1 PART SULTANA SEEDLESS RAISINS

3 OZ. RUM FLAVOR
CARAMEL COLOR (50% BURNT SUGAR)

1. Soften the raisins by suspending fruit in warm water for less than 1 hour. Drain the water and remove raisins.
2. Add rum flavor to the ice cream base mix before transferring to freezer unit.
3. Add caramel color for light brown consistency.
4. Freeze the mixture until it obtains the desired overrun and consistency.
5. Inject raisins into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

39. SWISS CHOCOLATE ALMOND

REFERENCE #2 FORMULA† ADDING:
1½ LBS. CHOPPED BUTTER ROASTED NONPAREIL ALMONDS

Follow steps 1-3 on CHOCOLATE formula, performing the following as the ice cream mixture is transferred from freezer to fruit feeder:

1. Inject butter roasted nonpareil almonds through the fruit feeder and into mixture as the ice cream is being discharged from the freezing chamber.

40. TOASTED ALMOND

5 GAL. PRIMARY BASE MIX
1½ LBS. CHOPPED BUTTER ROASTED NONPAREIL ALMONDS
5 OZ. PURE VANILLA EXTRACT
2 OZ. ALMOND EXTRACT
1 OZ. SALT
CARAMEL COLOR (50% BURNT SUGAR)

1. Prior to freezing, apply the Pure Vanilla extract, almond extract and salt to the ice cream base mix.
2. Add caramel color for light brown consistency.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject butter roasted nonpareil almonds through the fruit feeder and into mixture as the ice cream is being discharged from the freezing chamber.

† Reduce base mix by 5 percent in reference formula.

SHERBETS

Sherbet formulas produce approximately 10 gallons with 100 percent overrun

1. ORANGE

1 GAL. PRIMARY BASE MIX
3 DOZEN ORANGES (JUICED)
23-26 LBS. SUGAR
5 OZ. PREPARED VEGETABLE GUM
7 OZ. 50% CITRIC ACID SOLUTION
WATER TO MAKE 10 GALLONS
BEET JUICE, YELLOW FOOD COLORS

2. RASPBERRY

1 GAL. PRIMARY BASE MIX
4 QUARTS FRESH RASPBERRIES
24-27 LBS. SUGAR
5 OZ. PREPARED VEGETABLE GUM
6 OZ. 50% CITRIC ACID SOLUTION
WATER TO MAKE 10 GALLONS
BEET JUICE (FOR COLOR)

3. LEMON

1 GAL. PRIMARY BASE MIX
3 DOZEN LEMONS (JUICED, NO RINDS)
23-26 LBS. SUGAR
5 OZ. PREPARED VEGETABLE GUM
5 OZ. 50% CITRIC ACID SOLUTION
WATER TO MAKE 10 GALLONS
YELLOW FOOD COLOR

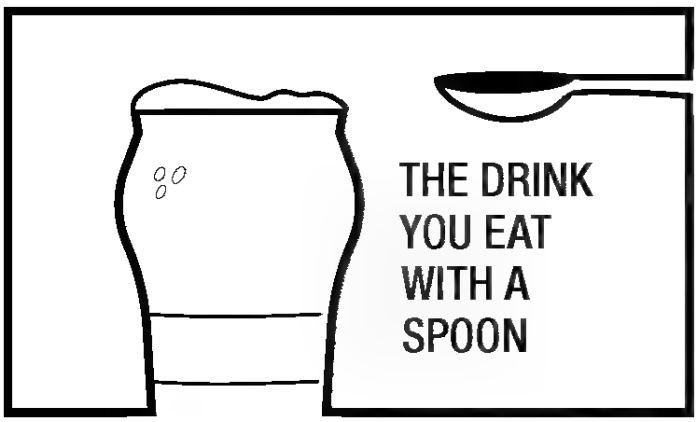
4. LIME

1 GAL. PRIMARY BASE MIX
3 DOZEN LIMES (JUICED, NO RINDS)
23-26 LBS. SUGAR
5 OZ. PREPARED VEGETABLE GUM
5 OZ. 50% CITRIC ACID SOLUTION
WATER TO MAKE 10 GALLONS
GREEN FOOD COLOR

5. PINEAPPLE

1 GAL. PRIMARY BASE MIX
1 #10 CAN CRUSHED PINEAPPLE
23-26 LBS. SUGAR
5 OZ. PREPARED VEGETABLE GUM
6 OZ. 50% CITRIC ACID SOLUTION
WATER TO MAKE 10 GALLONS
CARAMEL COLOR (50% BURNT SUGAR)

1. Citric acid is employed to give enhanced taste to sherbets. An equal weight of citric acid crystals and water makes a 50 percent solution which is the strength used in Company frozen dessert formulas. Dissolve the citric acid crystals in boiling water and cool. The amount of acid to use will depend on the flavor of sherbet produced.
2. Prepare the vegetable gum by combining equal parts guar, carrageenan and locust bean gums.
3. Prepare the indicated fruit ingredients. Citrus should be juiced as directed, removing seeds and pulp that may be present in the liquid.
4. Prior to freezing, add the fruit and sugar to the primary base mix, then add prepared vegetable gum with water. Citric acid solution will be added last.
5. Apply food color:
    - ORANGE — Deep orange color
    - RASPBERRY — Vibrant purple color
    - LEMON — Bright yellow color
    - LIME — Vibrant green color
    - PINEAPPLE — Light amber color
6. Transfer mixture to freezer unit.
7. Discharge sherbet after the desired overrun and consistency is obtained.



Ice Milk, Frostee

The Frostee frozen dessert is flavorless, distributed in bulk to the restaurant units and dipped at the soda fountain for thick shake drinks. The lower butterfat content and higher levels of stabilizer aid in producing a more whipped thick shake in the multimixer when compared to our 18% butterfat ice cream. The Frostee base must be stored for at least 12 hours in the refrigerated section of your manufacturing facility before transferring to the continuous freezer.

The lighter characteristics of the Frostee base have been adapted into a limited line of Ice Milk products which are distributed for sale in retail pints and quarts. Flavors in the Ice Milk are added after the base mix is pasteurized and homogenized. It is especially important to note that cocoa is added AFTER the pasteurization process for the production of Ice Milk.

With the proper ratio of ingredients, scaled to desired batch size, the FROSTEE MIX can be produced using the following steps:

1. Gather materials and precise quantities of each item specified.
2. Prepare vat for mixing and pasteurization. The pasteurization vat must **ALWAYS** be cleaned and properly sanitized before starting.
3. The liquid ingredients, such as cream, condensed skimmilk and water are first added and followed by solid ingredients: frozen egg yolk, sugar and gelatin.†
4. As soon as the materials have been slowly heated to 110-120° F, the sugar may be added to the base mix.
5. Pasteurize the base mix. (page 10)
6. Homogenize the base mix. (page 11)
7. Test for butterfat content: **3.5 percent** per Frostee mix sample.

FORMULA

FROSTEE MIX (100 LBS.)

10.00 LBS.	35% CREAM
44.19 LBS.	CONDENSED SKIMMILK
26.97 LBS.	WATER
0.40 LBS.	EGG YOLKS
18.00 LBS.	SUGAR
0.44 LB.	200 BLOOM GELATIN

RATIO

FROSTEE MIX

3.5%	BUTTERFAT
12.5%	MILK SOLIDS NOT FAT
0.2%	EGG YOLK SOLIDS
18%	SUGAR
0.4%	STABILIZER
34.6%	**TOTAL SOLIDS**

†Gelatin should be injected directly to the mix before the temperature of the pasteurizer reaches 110° F otherwise the consistency of the base may become lumpy.

ICE MILK

Ice Milk formulas produce approximately 10 gallons with 80 percent overrun

1. VANILLA

5½ GAL. FROSTEE BASE MIX

10 OZ. PURE VANILLA EXTRACT

1. Prior to freezing, apply the Pure Vanilla extract to the ice cream base mix.
2. Transfer mixture to freezer unit.
3. Discharge ice cream after the desired overrun and consistency is obtained.

2. CHOCOLATE

5 GAL. FROSTEE BASE MIX

COCOA SYRUP

- 1 LBS. DUTCH COCOA
- 1 LBS. SUGAR
- 1 QTS. WATER (IF USED AT ONCE)
- ½ OZ. SALT

1. Prepare cocoa syrup. The cocoa, sugar and salt should be mixed together, with a small amount of water to make a paste, and the balance of the water added. The mixture should be heated to around 170-180° F in the steam jacketed kettle, with constant stirring for 20-30 minutes and cooled before adding to the mix. If a large amount of syrup is to be made and not used at once, double the quantity of water before mixing.
2. Prior to freezing, apply cocoa syrup to the ice cream base mix.
3. Transfer mixture to freezer unit. Discharge ice cream after the desired overrun and consistency is obtained.

3. STRAWBERRY

5 GAL. PRIMARY BASE MIX

3 QTS. FRESH STRAWBERRIES

- 1½ LB. SUGAR TO SWEETEN
- 1½ OZ. PECTIN
- 3 OZ. 50% CITRIC ACID SOLUTION

1 OZ. BEET JUICE (FOR COLOR)

1. Prepare strawberries, slicing only the top of the berries. The strawberries should be mixed together with the sugar and pectin. The mixture should be kept below 40° F for 12-24 hours before adding to the mix.
2. Add beet juice to the ice cream mix for natural coloring prior to freezing. The mix should have a pink coloration.
3. Freeze the mixture until it obtains the desired overrun and consistency.
4. Inject strawberry mixture into fruit feeder while the ice cream is being discharged from the freezing chamber and transferred to the feeder.

Ingredient Instructions

BUTTERCRUNCH CANDY

20 LBS.	GRANULATED SUGAR
2. LBS.	INVERT SUGAR
10 LBS.	GRADE "A" BUTTER
3 TSP.	LECITHIN (AN EMULSIFIER)
10 LBS.	CHOPPED RAW ALMONDS
4 OZ.	IODIZED SALT
1 OZ.	BICARBONATE OF SODA

1. Combine sugar, invert sugar, butter and lecithin in a jacketed kettle and heat.
2. While maintaining a gentle heat, continue stirring until the composition of the mixture becomes homogeneous.
3. When the consistency of the liquid turns to a deep caramel color, turn off the kettle heat and whisk the bicarbonate of soda into the mixture.
4. On a metal tray coated in vegetable oils and chopped almonds, evenly pour out the mixture and score squares. After cooling, break apart the candy.

PECAN BRITTLE CANDY

20 LBS.	GRANULATED SUGAR
16. LBS.	CORN SYRUP
1 LBS.	INVERT SUGAR
4 LBS.	WATER
16 LBS.	CHOPPED RAW PECANS
1 LB.	BUTTER
6 OZ.	SALT
2 OZ.	BICARBONATE OF SODA

1. In a steam jacketed kettle, bring the sugar, corn syrup, invert sugar and water to a boiling point.
2. The pecans are added to the kettle while the mix is left to cook.
3. Turn off heating when mix temperature reaches approx. 295º F, then add the butter and salt. The bicarbonate of soda is whisked into the mix shortly after.
4. On a metal tray coated in vegetable oils, evenly pour out the mix and stretch the candy as thinly as possible.
5. Allow the candy to cool, then break apart into large brittle pieces.

BREWED COFFEE EXTRACT

2 LBS.	GROUND BRAZILIAN COFFEE
1 GAL.	WATER
0.5 OZ.	IODIZED SALT
1.5 OZ.	GELATIN POWDER

1. Ground the coffee to a fine consistency.
2. Add the water to a double boiler.
3. Using the boiler, heat the water and bring to a boiling point.
4. Add the coffee to the boiler and maintain heat for 10 minutes.
5. Strain liquid and add salt while extract is warm. Allow to cool for 12 hours.
6. Combine the coffee extract with gelatin before adding to ice cream mixture.

FUDGE RIPPLE SAUCE

1.25 QT.	CORN SYRUP
3 LBS.	GRANULATED SUGAR
2 QTS.	WATER
20 OZ.	DUTCH PROCESS COCOA
0.5 LB.	MODIFIED FOOD STARCH
0.5 LB.	BUTTER
1 OZ.	BENZOATE OF SODA
1 OZ.	XANTHAN GUM
1 OZ.	PURE VANILLA EXTRACT

1. Combine sugar, corn syrup, water, food starch, cocoa powder, butter, xanthan gum and benzoate of soda in a double boiler, setting to medium heat.
2. Whisk until the composition of the mixture becomes homogeneous and the temperature reaches a low boiling point.
3. Remove fudge ripple sauce from heat and stir the Pure Vanilla extract into the mixture.
4. Allow the sauce to cool, then set in refrigerator unit for over 12 hours.

CARAMEL RIPPLE SAUCE

1.25 QT.	CORN SYRUP
5 LBS.	GRANULATED SUGAR
2 QTS.	WATER
4 OZ.	BUTTERMILK POWDER
4 OZ.	SKIMMILK POWDER
1 LB.	BUTTER
3 OZ.	SALT
1.5 OZ.	BICARBONATE OF SODA
1 OZ.	BENZOATE OF SODA
1 OZ.	XANTHAN GUM
1 OZ.	PURE VANILLA EXTRACT

1. Combine sugar, corn syrup, water, buttermilk and skimmilk powders, butter, salt, benzoate of soda, xanthan gum and bicarbonate of soda in a double boiler, setting to medium heat.
2. Whisk until the composition of the mixture becomes homogeneous and the temperature reaches a low boiling point. The mixture should obtain a burnt sugar or caramel color consistency while thickening to a dense syrup.
3. Remove caramel ripple sauce from heat and stir the Pure Vanilla extract into the mixture.
4. Allow the sauce to cool, then set in refrigerator unit for over 12 hours.

Concluding the Process

REMEMBER

ADJUSTING THE BOOK FORMULAS FOR ICE CREAM AND SHERBETS BY 150% WILL LOWER THE OVERRUN FROM 100.00 PERCENT TO 50.00 PERCENT PER 10 GALLONS.

OVERRUN

Levels of overrun are adjusted either for the type of product sold, or the environment in which it will be served. The overrun obtained for the frozen desserts should be as follows:

ICE CREAM & SHERBETS
RETAIL PINTS, QUARTS AND HALF-GALLONS — **50.00% percent overrun**
BULK (3 GALLONS) — **100.00% percent overrun**
ICE MILK
RETAIL PINTS AND QUARTS — **80.00% percent overrun**

It is important to consider how the presence of egg yolks in the dairy bases increases the whipping ability of the mix and shortens the time required to freeze the frozen desserts. The dairy bases used by the Company have a tendency to obtain the target overrun in the freezer faster than those of other ice cream manufacturers.

PACKING

The Autopak units are equipped to fill pints and quarts automatically. The half-gallon containers are to be packed by hand. Ensure that the overrun of the frozen dessert is correct — either 50.00% for retail ice creams and sherbets or 80.00% for ice milk product.

Bulk ice creams and sherbets will need to be filled manually from the freezer into containers using a bulk filler.

All filled containers are immediately sent to the hardening room. The frozen dessert product in the freezer should be liquid enough to effectively discharge from the unit, yet frozen enough to prevent the formation of large ice crystals in the hardening room.

LEFT — Manual packing of bulk ice cream containers demands skillful labor with careful attention to uniform filling.

HARDENING

It cannot be understated to facility personnel the importance of hastening freezing times for frozen desserts. Remember that ice crystals that form in the hardening room will be larger in size than what is formed in the continuous freezer, resulting in a more coarse texture in the final product.

The conveyor belts installed in the manufacturing plant shorten the necessary freezing times, optimize packing and prevent spoilage throughout the facilities. An efficient plant recognizes the role of belts in the production of frozen desserts and utilizes them skillfully.

The primary function of the hardening room is to bring the temperature of frozen dessert to below 0.0º F. For smaller containers — retail pints, quarts and half-gallons — this temperature may be obtained as soon as 30 minutes or a full hour.

-30º F

RECOMMENDED TEMPERATURE OF HARDENING ROOM FOR ICE CREAM, SHERBETS AND ICE MILK PRODUCTS

TRANSPORTATION

When the frozen dessert has obtained the desired temperature, the product may be loaded onto refrigerated delivery trucks from docks adjacent to the hardening room. Conveyor belts are often used in loading the bulk ice cream directly onto the trailer. The trucks maintain a temperature of approximately -20º F. When loading the trailer, bulk ice cream should be stacked closest to ventilation and away from the doors. Pints and quarts are transported in wrapped gallon quantities: eight and four to a pack, respectively.

TOP — Bulk ice cream is loaded onto the refrigerated fleet from the hardening room using the conveyor belt system.
RIGHT — The horizontal stacking of bulk ice cream on refrigerated trailers keeps containers secure and reduces the blockage of air flow from evaporator fans.

Notes

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